TOOLS AND EQUIPMENT

air compressor and regulator
alignment tools
bending jig
bending tools and springs
black light
bolt cutter
brazing equipment
brush
butane torch
calculator
carbon dioxide (CO_2) cylinder and regulator
caulking gun
chalk line
charging manifold, cylinder, pump
chisels
circulating pump
cloth: sand, emery
computer terminal
crimpers
crowbar
drills: hand, electric
filter paper
fin combs
flaring tools
funnel
glue gun
graduated cylinder
grease gun
ground detectors
halide torch
hazardous waste container
hose
insulation tape
key pad
labelling machine
ladder
levels: laser, bubble, water, precision, line, transit
litmus paper
nitrogen cylinder and regulator
O-ring removal tool
oil pump
oxy-acetylene torch kit
padlock
paint roller
piercing clamps
pipe cutters
pipe dies
pipe threaders
pitot tube
printer
propane torch kit
pry bars
pullers
punch
purging unit
reamer
recovery/recycle unit
retrieval and storage equipment
router
sandpaper
saws: power/electric, jig, band, keyhole
scrapers
screw gun
simulator
socket set
soldering equipment (iron/gun)
sprayers: hand, pressure
squares
stapler
straight edge
strobe lights
swaging tools
tin snips
tube bender
tube cutter
tube reamer
turbo torch kit
utility knife
vacuum cleaner

vacuum pump
welding kit/equipment
wire benders
wire threaders

Tool Pouch (Common tools carried by Mechanic)

cutters: side, wire
electrical tape
files
flashlight
hammer
line level
mirror
nut drivers
pliers: needlenose, slip locking, snap ring
refractometer
schrader remover
screwdrivers: robertson, phillips
tape measure
vice grips
wire cutters
wire strippers
wrenches: open end, adjustable, allan, valve, pipe, torque impact

Hoisting and Rigging Equipment

block and tackle
chain fall
come-along
crane
fork lift
genie lift
hoist
jacks: hydraulic, mechanical
lifts
rope
scaffolding
sling
staging
winch

Measuring and Testing Instruments

acid test kits
air flow meter
air volume test equipment
ammeter
analyzers: combustion, CO_2, capacitor anemometer, vane, hot wire
calibration equipment
compound gauge
dial indicator
dye penetrant kit
eddy current tester
electronic balancing tools
electronic flue gas tester
electronic temperature sensor
filter paper
flame cell tester
flow meters
gauges: high vacuum, pressure, manifold, milvor, nitrogen, precision, temperature, draft
hydrometer
hygrometer
infrared thermography camera and display unit

leak detectors: electronic, ultrasonic, halide, soap test, litmus test, sulphur test
manometers: U-tube, incline
megger
micron gauge
milliamp meter
multimeter
ohmmeter
oxygen (O_2) tester
pH testing kit
phase meter
pneumatic calibration kit
potentiometer
psychrometer
rules
smoke tester
sound level meter
spectrometer
stethoscope
tachometer
tape measure
thermocouple tester
thermometers: dry and wet bulb, infrared
vacuum gauge
velometer
vibration analysis equipment
voltmeter
water analysis kit
wattmeter
weigh scales

First Aid and Safety Equipment

apron
barricades
fire blanket
fire extinguisher
fire hose
first aid kit/station
gloves: rubber, insulated
guard rails
mask
respirator
rubber boots
safety goggles
stretcher
warning signs

LIST OF ACRONYMS

Terms having a significant meaning for this analysis were operationally defined and are as follows:

CFC	chlorofluorocarbon
EP	electrical pressure switches
HCFC	hydrochlorofluorocarbon
HFC	hydrofluorocarbon
OEM	original equipment manufacturer
PE	pressure electric switches
SCR	silicon-controlled rectifiers
TX	thermostatic expansion valve
VAV	variable air vent
VVT	variable volume by temperature
WHMIS	Workplace Hazardous Materials Information Services

PERCENTAGE RATINGS

BLOCK A SAFETY AND SAFE WORKING PROCEDURES

Task 1 Demonstrates safe working practices.

BLOCK B BASIC WORK PRACTICES

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	10	5	5	15	3	5	15	10	7	10	5	NV	8%

Task 2 Manages job.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	10	10	25	10	20	40	3	80	24	20	10	NV	23%

Task 3 Rigs equipment, tools and materials.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	30	30	15	10	10	20	7	5	16	10	20	NV	16%

Task 4 Installs refrigerant piping/tubing.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	60	60	60	80	70	40	90	15	60	70	70	NV	61%

BLOCK C REFRIGERATION SYSTEMS

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	15	10	15	15	10	19	10	20	27	15	20	NV	16%

Task 5 Designs refrigeration systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	5	2	10	10	1	10	2	20	17	10	0	NV	8%

Task 6 Diagnoses absorption system malfunctions. **(NOT COMMON CORE)**

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	0	1	0	0	3	6	0	0	1	1	0	NV	1%

Task 7 Overhauls absorption systems. **(NOT COMMON CORE)**

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	0	1	0	0	1	6	0	0	1	1	0	NV	1%

Task 8 Installs absorption systems. **(NOT COMMON CORE)**

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	0	1	0	0	1	2	0	0	1	1	0	NV	1%

Task 9 Installs primary refrigerant systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	15	2	15	30	3	10	30	20	23	20	20	NV	17%

Task 10 Constructs secondary refrigeration systems for artificial ice rinks.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	2	2	1	10	4	6	5	5	9	5	0	NV

Nat. Avg.
4%

Task 11 Diagnoses mobile system malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	3	3	10	4	3	6	1	2	1	2	0	NV

Nat. Avg.
3%

Task 12 Overhauls mobile systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	2	3	4	3	1	6	1	2	1	2	0	NV

Nat. Avg.
2%

Task 13 Installs mobile systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	1	3	2	3	1	2	1	2	1	2	0	NV

Nat. Avg.
2%

Task 14 Diagnoses self-contained system malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	25	26	20	10	20	12	5	20	11	20	25	NV

Nat. Avg.
18%

Task 15 Overhauls self-contained systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	25	26	13	10	10	12	15	10	7	5	20	NV

Nat. Avg.
14%

Task 16 Installs self-contained systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	15	15	15	10	10	10	10	10	4	20	15	NV	12%

Task 17 Commissions refrigeration systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	7	15	10	10	42	12	30	9	23	11	20	NV	17%

BLOCK D AIR CONDITIONING SYSTEMS

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	15	10	15	15	10	25	15	10	22	20	20	NV	16%

Task 18 Designs air conditioning systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	5	7	2	1	10	6	10	11	5	0	NV	5%

Task 19 Diagnoses air handling system malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	20	10	15	10	3	10	7	10	27	25	20	NV	14%

Task 20 Overhauls air handling systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	20	10	3	10	1	10	7	10	1	5	20	NV	9%

Task 21 Installs air handling systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	6	3	0	1	4	1	10	1	10	5	NV	4%

Task 22 Diagnoses heating system malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	10	15	14	8	20	8	12	5	22	20	0	NV	12%

Task 23 Overhauls heating systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	2	3	7	3	5	7	5	4	5	0	NV	4%

Task 24 Installs heating systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	2	3	0	2	3	11	5	0	5	0	NV	3%

Task 25 Diagnoses humidifier malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	1	7	4	5	3	2	2	1	1	0	NV	3%

Task 26 Overhauls humidifiers.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	3	1	4	4	5	3	2	2	1	1	0	NV	2%

Task 27 Installs humidifiers.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	3	1	3	0	4	2	1	2	1	1	0	NV	2%

Task 28 Diagnoses ventilation and air exchange system malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	10	2	10	8	6	8	3	5	16	5	0	NV	7%

Task 29 Overhauls ventilation and air exchange systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	5	1	5	7	2	8	7	10	4	1	20	NV	6%

Task 30 Installs ventilation and air exchange systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	5	1	3	0	2	3	2	4	0	2	0	NV	2%

Task 31 Diagnoses air cleaning assembly malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	1	8	5	2	3	1	4	1	1	0	NV	3%

Task 32 Overhauls air cleaning assemblies.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	1	4	5	2	3	2	3	1	1	0	NV	2%

Task 33 Installs air cleaning assemblies.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	2	1	4	0	1	2	1	0	0	2	20	NV

Nat. Avg. 3%

Task 34 Commissions air conditioning and heat pump systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	8	40	4	30	40	15	28	13	9	10	15	NV

Nat. Avg. 19%

BLOCK E SERVICE AND REPAIR OF REFRIGERATION AND AIR CONDITIONING SYSTEMS

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	40	55	40	25	60	35	20	40	27	30	40	NV

Nat. Avg. 38%

Task 35 Detects refrigerant leaks.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	2	5	6	4	2	6	5	10	3	10	4	NV

Nat. Avg. 5%

Task 36 Repairs refrigerant leaks.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	2	5	6	3	3	9	5	5	4	8	8	NV

Nat. Avg. 5%

Task 37 Performs refrigerant conversion.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	2	1	2	3	1	5	8	5	1	2	6	NV

Nat. Avg. 3%

Task 38 Decommissions equipment.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	1	1	3	1	2	4	2	1	1	1	NV	2%

Task 39 Diagnoses compressor malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	4	12	5	6	5	3	10	5	8	10	14	NV	7%

Task 40 Overhauls compressor assemblies.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	4	5	3	6	3	5	13	2	7	3	0	NV	5%

Task 41 Installs compressor assemblies.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	6	2	3	5	2	3	5	5	6	5	12	NV	5%

Task 42 Diagnoses evaporator and defrost system malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	3	5	5	6	2	3	2	3	2	10	8	NV	4%

Task 43 Overhauls evaporator and defrost assemblies.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	3	5	3	6	1	4	4	3	1	2	4	NV	3%

Task 44 Installs evaporator and defrost assemblies.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	3	2	2	5	3	3	3	5	2	5	5	NV

Nat. Avg.
3%

Task 45 Diagnoses air, water and evaporative condenser and cooling tower assembly malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	2	2	3	6	2	4	2	2	4	1	1	NV

Nat. Avg.
3%

Task 46 Overhauls condenser assemblies including air, water and evaporative condensers.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	2	2	2	6	3	4	3	2	1	1	5	NV

Nat. Avg.
3%

Task 47 Installs condenser assemblies including air, water and evaporative condenser.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	5	2	2	5	2	3	4	5	2	1	5	NV

Nat. Avg.
3%

Task 48 Installs cooling tower assemblies.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	2	2	1	3	2	2	1	0	0	1	0	NV

Nat. Avg.
1%

Task 49 Overhauls cooling tower assemblies.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK
	2	2	2	3	2	3	2	2	1	1	0	NV

Nat. Avg.
2%

Task 50 Diagnoses system accessory malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	10	1	6	3	1	4	10	15	26	6	5	NV	8%

Task 51 Overhauls system accessories.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	10	1	5	4	1	3	5	5	2	5	5	NV	4%

Task 52 Installs system accessories.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	10	1	5	4	2	3	5	5	3	5	5	NV	4%

Task 53 Diagnoses circulating pump malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	2	3	3	2	3	1	2	1	1	0	NV	2%

Task 54 Overhauls circulating pumps.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	2	2	3	1	4	1	0	1	1	0	NV	3%

Task 55 Installs circulating pumps.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	2	2	2	3	1	4	1	0	0	1	0	NV	1%

Task 56 Performs preventive maintenance on refrigeration and air conditioning systems.

	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
%	10	19	13	5	35	10	3	15	19	10	10	NV	14%

Task 57 Performs preventative maintenance on heating, air conditioning and heat pump systems.

	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
%	10	19	18	5	23	10	3	2	5	10	2	NV	10%

BLOCK F CONTROL SYSTEMS

	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
%	7	5	10	15	10	14	20	10	6	10	5	NV	10%

Task 58 Diagnoses metering device malfunctions.

	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
%	10	10	25	20	25	15	10	10	15	15	18	NV	16%

Task 59 Overhauls metering devices.

	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
%	5	10	10	5	25	10	5	5	4	5	15	NV	9%

Task 60 Installs metering devices.

	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
%	5	10	10	5	10	10	5	10	15	5	11	NV	9%

Task 61 Diagnoses control system malfunctions.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	50	20	25	30	20	25	50	25	33	30	29	NV	30%

Task 62 Repairs control systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	15	30	20	20	15	25	20	25	33	25	27	NV	23%

Task 63 Installs control systems.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	15	20	10	20	5	15	10	25	0	20	0	NV	13%

BLOCK G PACKAGED AND SPLIT SYSTEMS

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	7	10	5	10	5	1	5	5	4	10	5	NV	6%

Task 64 Installs packaged systems for heating, refrigeration, air conditioning, heat pumps and dehumidification.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	50	60	60	30	60	45	30	25	10	60	40	NV	43%

Task 65 Installs split systems for refrigeration, air conditioning, heat pumps and dehumidification.

%	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
	50	40	40	70	40	55	70	75	90	40	60	NV	57%

BLOCK H **PREPARATION OF CONSTRUCTION FOR REFRIGERATION AND AIR CONDITIONING SPACE**

	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
%	6	5	10	5	2	1	15	5	7	5	5	NV	6%

Task 66 Constructs walk-in boxes.

	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
%	30	45	40	25	35	46	45	65	30	15	40	NV	38%

Task 67 Constructs computer rooms. **(NOT COMMON CORE)**

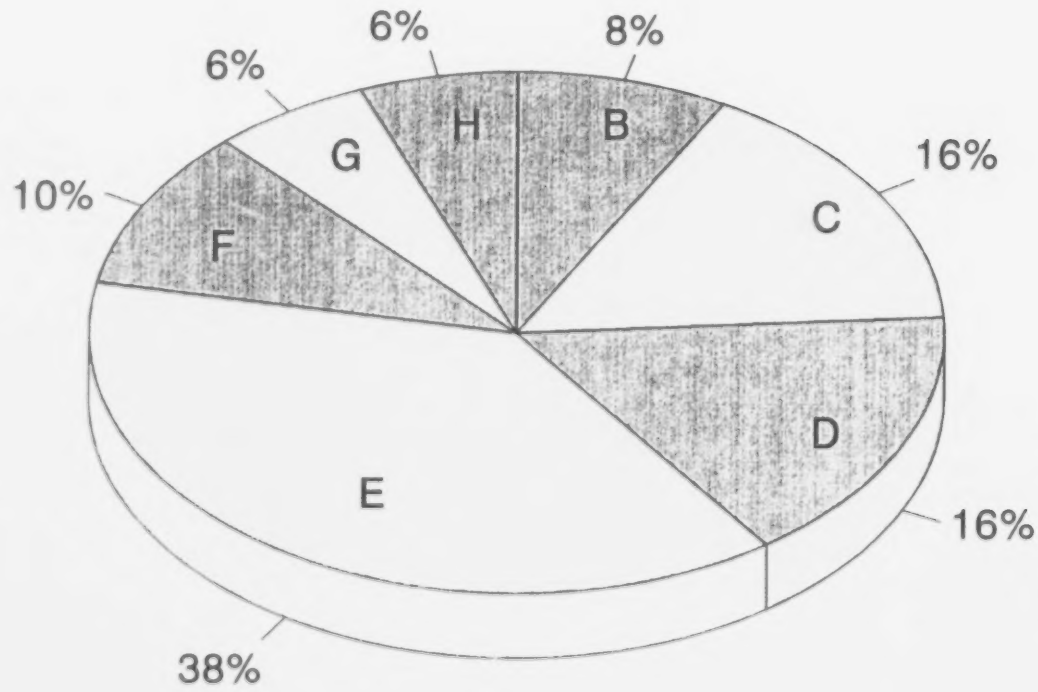
	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
%	10	10	5	0	5	0	10	0	20	5	0	NV	6%

Task 68 Installs display cases.

	NF	NS	PE	NB	PQ	ON	MA	SK	AB	BC	NT	YK	Nat. Avg.
%	60	45	55	75	60	54	45	35	50	80	60	NV	56%

BLOCK PERCENTAGES*

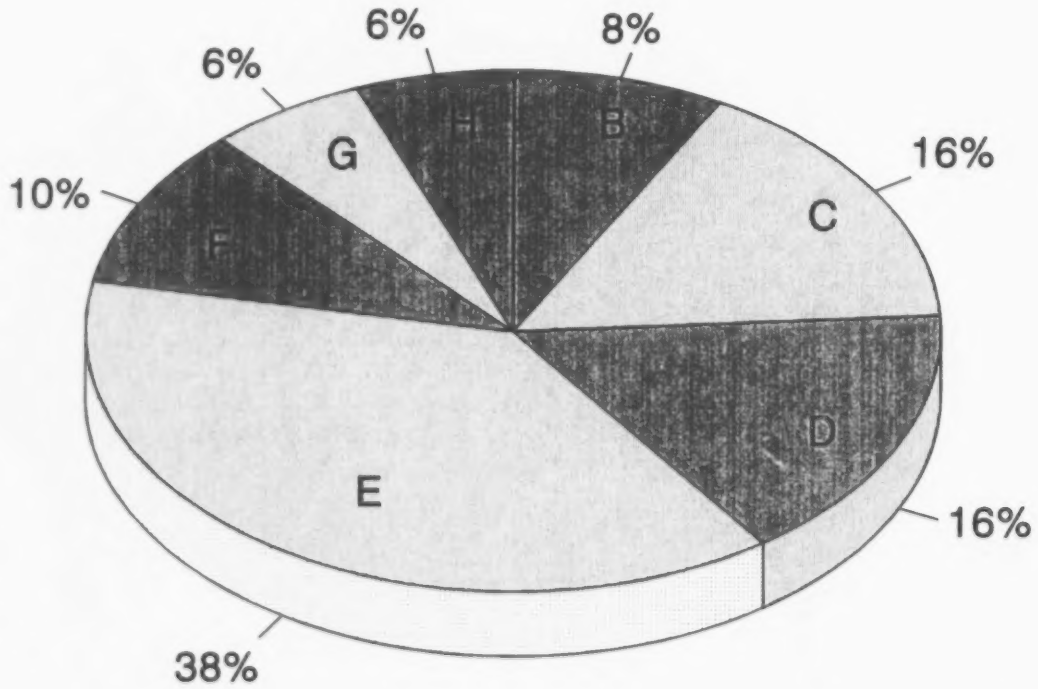
Refrigeration and Air Conditioning Mechanic



* The average time a worker spends performing each block in a given year in relation to other blocks of the analysis, taking into consideration the complexity (importance plus difficulty) of the block.

BLOCK PERCENTAGES*

Refrigeration and Air Conditioning Mechanic



* The average time a worker spends performing each block in a given year in relation to other blocks of the analysis, taking into consideration the complexity (importance plus difficulty) of the block.

TITLES OF BLOCKS

A	SAFETY AND SAFE WORKING PROCEDURES**
B	BASIC WORK PRACTICES
C	REFRIGERATION SYSTEMS
D	AIR CONDITIONING SYSTEMS
E	SERVICE AND REPAIR OF REFRIGERATION AND AIR CONDITIONING SYSTEMS
F	CONTROL SYSTEMS
G	PACKAGED AND SPLIT SYSTEMS
H	PREPARATION OF CONSTRUCTION FOR REFRIGERATION AND AIR CONDITIONING SPACE

** Since safety practices are a mandatory feature of all occupations, they are considered common core, ratings are not required and thus Block A does not appear on the chart.

REFRIGERATION AND AIR CONDITIONING MECHANIC (1997)

BLOCKS	TASKS	SUB-TASKS
A **Safety and Safe Working Procedures**	1. Demonstrates safe working practices.	1.01 Protects personal and public health and safety. 1.02 Assures protection from fire hazards. 1.03 Complies with government regulations, codes and standards. 1.04 Obtains refrigerant handling certification. 1.05 Recognizes hazardous materials. 1.06 Operates emergency safety equipment. 1.07 Applies first aid to injured person(s). 1.08 Maintains good housekeeping. 1.09 Maintains tools and equipment. 1.10 Operates tools and equipment. 1.11 Wears personal protective equipment and clothing. 1.12 Reports injuries to supervisor. 1.13 Handles refrigerants and compressed gases in a safe manner. 1.14 Stores equipment and products in a safe manner. 1.15 Transports equipment and products in a safe manner. 1.16 Recognizes electrical hazards.
B **Basic Work Practices**	2. Manages job.	2.01 Coordinates planning with customer. 2.02 Interprets drawings and sketches. 2.03 Reviews work orders. 2.04 Orders equipment, parts and accessories. 2.05 Maintains inventory in vehicle. 2.06 Obtains permits and inspections. 2.07 Develops job schedule. 2.08 Coordinates with sub-trades. 2.09 Expedites equipment, parts and accessories. 2.10 Completes material lists. 2.11 Completes service reports. 2.12 Maintains customer relations.
	3. Rigs equipment, tools and materials.	3.01 Erects scaffolding and ladders. 3.02 Establishes lift points. 3.03 Selects rigging and hoisting equipment. 3.04 Ties off materials. 3.05 Operates moving and lifting equipment. 3.06 Directs hoisting equipment operators.
	4. Installs refrigerant piping/tubing.	4.01 Fabricates hangers. 4.02 Mounts hangers. 4.03 Prepares holes/passages for piping/tubing. 4.04 Mounts fasteners. 4.05 Positions pipe(s). 4.06 Swages tubing. 4.07 Flares tubing. 4.08 Threads pipe(s). 4.09 Cuts pipe(s)/ tubing. 4.10 Bends pipe(s)/tubing. 4.11 Reams pipe(s)/ tubing. 4.12 Cleans pipe/ tubing ends and fittings. 4.13 Purges system with inert gas for brazing/soldering/ welding. 4.14 Solders pipe(s)/tubing and fittings. 4.15 Joins piping mechanically. 4.16 Brazes pipe(s)/ tubing and fittings. 4.17 Performs pressure test on system. 4.18 Depressurizes system. 4.19 Evacuates refrigeration system. 4.20 Insulates pipe(s)/ tubing.
C **Refrigeration Systems**	5. Designs refrigeration systems.	5.01 Interprets refrigerant tables, charts, diagrams, pressure-enthalpy diagrams. 5.02 Establishes refrigeration load requirements for cooling and freezing. 5.03 Establishes requirements for refrigeration system, including multiple systems. 5.04 Selects refrigeration equipment, piping and accessories. 5.05 Determines equipment layout. 5.06 Prepares drawings and sketches. 5.07 Prepares estimate. 5.08 Submits drawings for approval.
	6. Diagnoses absorption system malfunctions.*	6.01 Inspects absorption system.* 6.02 Runs on-board diagnostics.* 6.03 Purges non-condensibles from system.* 6.04 Checks functionality and output of electrical components.* 6.05 Checks operating temperatures and pressures.* 6.06 Checks capacity control system.* 6.07 Verifies fluid flow.* 6.08 Checks concentration of solution.* 6.09 Checks functionality of burner components.* 6.10 Determines cause of failure.* 6.11 Determines repair requirements.*

* = (NOT COMMON CORE)

BLOCKS	TASKS	SUB-TASKS
		6.12 Determines warranty status.*
7. Overhauls absorption systems.*		7.01 Shuts down system, including lock out.*
		7.02 Isolates absorption systems.*
		7.03 Recovers lithium bromide solutions.*
		7.04 Disassembles absorption systems.*
		7.05 Inspects absorption system components.*
		7.06 Selects replacement components.*
		7.07 Repairs components.*
		7.08 De-crystallizes heat exchanger.*
		7.09 Replaces defective components.*
		7.10 Reassembles absorption systems.*
		7.11 Checks for air leaks.*
		7.12 Arranges for re-certification of condenser.*
8. Installs absorption systems.*		8.01 Removes shipping materials.*
		8.02 Verifies absorption system specifications.*
		8.03 Positions system by rigging and hoisting.*
		8.04 Levels system.*
		8.05 Mounts controls and valves.*
		8.06 Hooks up utilities.*
		8.07 Connects piping.*
		8.08 Checks piping connections.*
		8.09 Evacuates non-condensible from system.*
		8.10 Arranges for certification.*
9. Installs primary refrigerant systems.		9.01 Certifies primary refrigerant system.
		9.02 Aligns drives.
		9.03 Evacuates system.
		9.04 Performs leak test on system.
		9.05 Pipes in major components.
		9.06 Connects utilities.
		9.07 Positions major equipment.
10. Constructs secondary refrigeration systems for artificial ice rinks.		10.01 Installs heating grids.
		10.02 Prepares piping beds.
		10.03 Insulates piping beds.
		10.04 Positions sleepers or pipe spacers.
		10.05 Installs headers, secondary refrigerant lines and pumps.
		10.06 Installs pipe chairs.
		10.07 Runs plastic piping and fittings.
		10.08 Performs leak test on brine lines.
		10.09 Monitors pouring of concrete floor.
		10.10 Charges secondary system with secondary refrigerant.
		10.11 Bleeds air from secondary refrigerant system.
		10.12 Starts up system.
		10.13 Adjusts controls.
11. Diagnoses mobile system malfunctions.		11.01 Inspects mobile systems visually and audibly.
		11.02 Interprets operating manuals.
		11.03 Runs on-board diagnostics.
		11.04 Checks electrical components.
		11.05 Checks operating temperatures, pressures and humidity.
		11.06 Checks capacity control system.
		11.07 Checks drive system.
		11.08 Verifies fluid flow.
		11.09 Adjusts controls for product requirements.
		11.10 Determines cause of failure.
		11.11 Determines repair requirements.
		11.12 Determines clean-up procedures.
		11.13 Determines warranty status.
12. Overhauls mobile systems.		12.01 Shuts down system.
		12.02 Isolates system.
		12.03 Recovers refrigerant.
		12.04 Disassembles unit.
		12.05 Inspects mobile system components electrically.
		12.06 Inspects mobile system components mechanically.
		12.07 Aligns drive systems.
		12.08 Lubricates drive systems.
		12.09 Repairs drive system components.
		12.10 Performs oil analysis.
		12.11 Repairs mobile system components.

* = (NOT COMMON CORE)

BLOCKS | TASKS | SUB-TASKS

		12.12 Replaces mobile system components.
		12.13 Reassembles unit(s).
		12.14 Performs leak test on mobile systems.
		12.15 Evacuates repair.
		12.16 Recharges mobile system.
		12.17 Services thermal electric refrigeration systems.
13. Installs mobile systems.		
		13.01 Removes shipping materials.
		13.02 Verifies mobile system specifications.
		13.03 Positions unit by rigging and hoisting.
		13.04 Aligns drive assemblies.
		13.05 Connects utilities.
		13.06 Connects piping/tubing.
		13.07 Connects air distribution systems.
		13.08 Connects drain lines.
		13.09 Hooks up drive system to refrigeration unit.
		13.10 Wires operating controls and safety devices.
		13.11 Charges mobile system.
		13.12 Sets up unit.
14. Diagnoses self-contained system malfunctions.		
		14.01 Inspects self-contained systems visually and audibly.
		14.02 Interprets operating manuals.
		14.03 Runs on-board diagnostics.
		14.04 Checks electrical components.
		14.05 Checks operating pressures, temperature and humidity.
		14.06 Checks capacity control system.
		14.07 Verifies fluid flow.
		14.08 Adjusts controls for products.
		14.09 Determines cause of failure.
		14.10 Determines repair requirements.
		14.11 Determines clean-up procedures.
		14.12 Determines warranty status.
15. Overhauls self-contained systems.		
		15.01 Shuts down system.
		15.02 Isolates system.
		15.03 Recovers refrigerant.
		15.04 Disassembles unit.
		15.05 Inspects components electrically.
		15.06 Inspects components mechanically.
		15.07 Performs oil analysis.
		15.08 Repairs system components.
		15.09 Replaces system components.
		15.10 Adjusts gaskets and door hardware.
		15.11 Replaces gaskets and door hardware.
		15.12 Reassembles unit(s).
		15.13 Evacuates system.
		15.14 Performs leak test on self-contained systems.
		15.15 Charges dry system.
16. Installs self-contained systems.		
		16.01 Removes shipping materials.
		16.02 Verifies specifications.
		16.03 Positions system by rigging and hoisting.
		16.04 Levels self-contained systems.
		16.05 Connects utilities.
		16.06 Connects air distribution system.
		16.07 Connects drain lines.
		16.08 Performs oil analysis.
		16.09 Wires operating controls and safety devices.
		16.10 Charges dry system.
		16.11 Starts up self-contained system.
17. Commissions refrigeration systems.		
		17.01 Reviews manufacturers' specifications for commissioning refrigeration systems.
		17.02 Checks utility sources.
		17.03 Checks phase rotation.
		17.04 Checks crankcase heater.
		17.05 Checks wiring.
		17.06 Meggers motor.
		17.07 Checks positions of isolation valves.
		17.08 Sets-up valve operation.
		17.09 Charges system.
		17.10 Starts up system.
		17.11 Checks operating temperatures, pressures and humidity.

* = (NOT COMMON CORE)

REFRIGERATION AND AIR CONDITIONING MECHANIC (1997)

BLOCKS	TASKS	SUB-TASKS
		17.12 Sets superheats.
		17.13 Balances water flow for refrigeration systems.
		17.14 Checks sub-cooling.
		17.15 Sets-up operating and safety controls.
		17.16 Sets-up heat reclaim/recovery system.
		17.17 Verifies operation of purge unit system.
		17.18 Checks defrost for refrigeration.
		17.19 Checks fluid levels.
		17.20 Checks voltage and amperage.
		17.21 Checks motor drives.
		17.22 Checks remote and in-house alarms.
		17.23 Labels equipment.
		17.24 Completes start up report.
		17.25 Completes warranty cards.
		17.26 Instructs customer on system operation.
D **Air Conditioning Systems**	**18.** Designs air conditioning systems.	18.01 Interprets set of building drawings.
		18.02 Interprets psychrometric charts.
		18.03 Establishes requirements for air conditioning system.
		18.04 Calculates load requirements for air conditioning system.
		18.05 Selects air conditioning equipment, piping and accessories.
		18.06 Selects air conditioning control systems.
		18.07 Selects ducting for air conditioning system.*
		18.08 Determines equipment layout.
		18.09 Prepares drawings and sketches.
		18.10 Determines job parameters.
		18.11 Prepares estimate.
		18.12 Submits drawings for approval.
	19. Diagnoses air handling system malfunctions.	19.01 Inspects air handling system.
		19.02 Checks functionality and output of electrical components.
		19.03 Checks operating static pressure, temperature and humidity.
		19.04 Checks capacity controls.
		19.05 Verifies flow of fluids.
		19.06 Verifies flow across coils.
		19.07 Measures air velocity.
		19.08 Measures air pressure drop across coils.
		19.09 Conducts electrical test.
		19.10 Determines cause of failure.
		19.11 Determines repair requirements.
		19.12 Determines warranty status.
	20. Overhauls air handling systems.	20.01 Shuts down system including lock out.
		20.02 Isolates air handling system.
		20.03 Recovers refrigerant.
		20.04 Drains fluids.
		20.05 Disassembles air handling system.
		20.06 Inspects air handling mechanical components.
		20.07 Selects replacement components.
		20.08 Repairs dampers and linkages.
		20.09 Replaces components.
		20.10 Reassembles air handling system.
		20.11 Performs leak test on system.
	21. Installs air handling systems.	21.01 Removes shipping materials.
		21.02 Verifies air handling system specifications.
		21.03 Mounts control valves.
		21.04 Aligns air handling systems.
		21.05 Connects power supply, including fans.
		21.06 Connects pipe(s)/tubing, including couplings and fittings.
		21.07 Checks piping/tubing connections, including couplings and fittings.
		21.08 Evacuates non-condensibles from system.
		21.09 Performs leak test on system.
	22. Diagnoses heating system malfunctions.	22.01 Inspects heating systems.
		22.02 Runs on-board diagnostics.
		22.03 Checks functionality and output of electrical components.
		22.04 Checks operating temperatures, pressures and humidity.
		22.05 Assesses combustion efficiency.
		22.06 Verifies venting.
		22.07 Checks capacity control systems.
		22.08 Checks dampers.
		22.09 Checks heating capacity.
		22.10 Verifies air flow.
		22.11 Verifies combustion air flow.

* = (NOT COMMON CORE)

BLOCKS	TASKS	SUB-TASKS									
		22.12 Tests condition of water, steam and heat distribution.	22.13 Checks condensate drain.	22.14 Determines cause of failure.	22.15 Determines repair requirements.	22.16 Determines warranty status.					
	23. Overhauls heating systems.	23.01 Shuts down system, including lock out.	23.02 Disassembles heating system.	23.03 Inspects mechanical components.	23.04 Inspects electrical components.	23.05 Inspects fuel components.	23.06 Selects electrical and mechanical replacement components.	23.07 Repairs defective electrical and mechanical components.	23.08 Replaces defective electrical and mechanical components.	23.09 Reassembles heating system.	23.10 Arranges for certification of heating system.
	24. Installs heating systems.	24.01 Removes shipping materials.	24.02 Verifies heating system specifications.*	24.03 Mounts heating system.*	24.04 Mounts controls and valves.*	24.05 Aligns heating system.*	24.06 Levels heating system.	24.07 Installs utilities.*	24.08 Installs venting system.*	24.09 Performs leak test on system(s).*	24.10 Arranges for certification.*
	25. Diagnoses humidifier malfunctions.	25.01 Inspects humidifier assemblies visually.	25.02 Runs on-board diagnostics.	25.03 Checks voltage, current and amperage draw.	25.04 Checks operating temperatures and humidity for dehumidifiers.	25.05 Checks capacity control system(s).	25.06 Verifies air flow across humidifier.	25.07 Calibrates nozzles.	25.08 Determines cause of failure.	25.09 Determines repair requirements.	25.10 Determines warranty status.
	26. Overhauls humidifiers.	26.01 Isolates feed water or steam water.	26.02 Disassembles humidifiers.	26.03 Inspects for scale condition.	26.04 Inspects condition of electrical components and controls.	26.05 Selects replacement components.	26.06 Cleans float assemblies.	26.07 Calibrates nozzles.	26.08 Conditions water.	26.09 Replaces humidifier components.	26.10 Reassembles humidifier system.	26.11 Performs leak test on system.
	27. Installs humidifiers.	27.01 Removes shipping materials.	27.02 Verifies humidifier specifications.	27.03 Mounts humidifier.	27.04 Levels humidifier.	27.05 Connects electric motor or power supply.*	27.06 Connects piping/tubing and drains.	27.07 Checks piping/tubing connections including couplings and fittings.	27.08 Performs leak test on system.		
	28. Diagnoses ventilation and air exchange system malfunctions.	28.01 Inspects ventilation and air exchange systems.	28.02 Runs on-board diagnostics.	28.03 Checks functionality and output of electrical components.	28.04 Checks operating temperatures, pressures and humidity.	28.05 Checks capacity control system.	28.06 Checks dampers.	28.07 Checks heating capacity.	28.08 Verifies air flow.	28.09 Tests condition of distribution of water/steam.	28.10 Determines cause of failure.	28.11 Determines repair requirements.
		28.12 Determines warranty status.									
	29. Overhauls ventilation and air exchange systems.	29.01 Shuts down system, including lock out.	29.02 Disassembles ventilation and air exchange system.	29.03 Inspects mechanical components.	29.04 Inspects electrical components.	29.05 Selects replacement components.	29.06 Repairs defective components.	29.07 Replaces defective components.	29.08 Reassembles ventilation and air exchange system.		

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REFRIGERATION AND AIR CONDITIONING MECHANIC (1997)

BLOCKS	TASKS	SUB-TASKS
	30. Installs ventilation and air exchange systems.	30.01 Removes shipping materials.
		30.02 Verifies ventilation and air exchange system specifications.
		30.03 Mounts ventilation and air exchange system.
		30.04 Mounts controls or valves.*
		30.05 Aligns device.*
		30.06 Levels device.
		30.07 Connects electric motor or power supply.
		30.08 Connects gas piping/tubing and fittings.*
		30.09 Checks gas piping/tubing connections.*
		30.10 Performs leak test on system.*
		30.11 Arranges for certification.*
	31. Diagnoses air cleaning assembly malfunctions.	31.01 Inspects air cleaning assemblies visually and audibly.
		31.02 Checks functionality and output of electric/ electronic components.
		31.03 Checks operating pressures across cleaner.
		31.04 Verifies air flow.
		31.05 Conducts air quality test.*
		31.06 Checks drive assembly on automatic air cleaners.
		31.07 Determines repair requirements.
		31.08 Determines warranty status.
	32. Overhauls air cleaning assemblies.	32.01 Shuts down system, including lock out.
		32.02 Isolates air cleaning assembly.
		32.03 Disassembles air cleaning assembly.
		32.04 Inspects components.
		32.05 Selects replacement components.
		32.06 Repairs defective components.
		32.07 Cleans components.
		32.08 Replaces defective components.
		32.09 Reassembles air cleaning assembly.
	33. Installs air cleaning assemblies.	33.01 Removes packaging/shipping materials.
		33.02 Verifies air cleaning system specifications.
		33.03 Mounts air cleaning assembly.
		33.04 Aligns air cleaning assembly.
		33.05 Levels air cleaning assembly.
		33.06 Mounts controls and valves.
		33.07 Hooks up electric motor or power supply.*
	34. Commissions air conditioning and heat pump systems.	34.01 Reviews manufacturers' specifications for commissioning systems.
		34.02 Checks utility sources.
		34.03 Checks phase rotation.
		34.04 Checks wiring.
		34.05 Meggers motor.
		34.06 Checks positions of isolation valves.
		34.07 Sets up economizer.
		34.08 Sets up valve operation.
		34.09 Sets up variable inlet vanes.
		34.10 Conducts air balance.*
		34.11 Sets up heating section.
		34.12 Sets up exhaust fans.
		34.13 Sets up face and by-pass dampers.
		34.14 Adjusts humidification levels.
		34.15 Adjusts dehumidification levels.
		34.16 Checks condition of filter(s).
		34.17 Charges system.
		34.18 Starts up system.
		34.19 Checks operating temperatures and pressures.
		34.20 Sets superheats.
		34.21 Checks sub-cooling.
		34.22 Sets up operating and safety controls.
		34.23 Sets up heat reclaim/recovery system.
		34.24 Verifies operation of purge unit system.
		34.25 Checks defrost for heat pump systems.
		34.26 Checks fluid levels.
		34.27 Checks voltage and amperage.
		34.28 Checks motor drives.
		34.29 Checks remote and in-house alarms.
		34.30 Labels equipment.
		34.31 Completes start up report.
		34.32 Completes warranty cards.
		34.33 Instructs customer on system operation.
E	**Service and Repair of Refrigeration and Air Conditioning Systems**	
	35. Detects refrigerant leaks.	35.01 Obtains refrigerant handling certification.
		35.02 Interprets remote electronic monitoring system data.
		35.03 Identifies type of refrigerant.
		35.04 Installs high/low side gauge.
		35.05 Pressurizes system.
		35.06 Inspects system visually.
		35.07 Isolates portion of system to be tested.
		35.08 Conducts audible check of system.
		35.09 Checks system for odours.
		35.10 Performs halide torch test.
		35.11 Performs electronic test.
		35.12 Performs ultrasonic test.
		35.13 Performs leak test using soap solution.
		35.14 Performs leak test for ammonia using sulphur stick or litmus paper.
		35.15 Performs leak test using submersion method.
		35.16 Performs dye penetrant test.

* = (NOT COMMON CORE)

REFRIGERATION AND AIR CONDITIONING MECHANIC (1997)

BLOCKS	TASKS	SUB-TASKS
	36. Repairs refrigerant leaks.	36.01 Isolates leak.
		36.02 Determines cause and corrective action.
		36.03 Pumps down system.
		36.04 Recovers refrigerant.
		36.05 Removes damaged pipe/tubing section(s) and fittings.
		36.06 Installs new pipe/tubing section(s) and fittings.
		36.07 Replaces gaskets, seals and O-rings.
		36.08 Repairs valves.
		36.09 Replaces valves.
		36.10 Repairs condensers.
		36.11 Replaces condensers.
		36.12 Repairs compressors.
		36.13 Replaces compressors.
		36.14 Repairs evaporators.
		36.15 Replaces evaporators.
		36.16 Repairs metering devices.
		36.17 Replaces metering devices.
		36.18 Repairs receivers.
		36.19 Replaces receivers.
		36.20 Repairs accessories.
		36.21 Replaces accessories.
		36.22 Performs leak test on piping system.
		36.23 Performs pressure test.
		36.24 Evacuates system.
		36.25 Recycles refrigerant.
		36.26 Recharges system.
		36.27 Confirms system operation.
	37. Performs refrigerant conversion.	37.01 Determines feasibility of conversion.
		37.02 Determines requirements for mechanical room modification.
		37.03 Selects replacement refrigerant.
		37.04 Determines component replacement requirements.
		37.05 Recovers existing refrigerant.
		37.06 Replaces refrigerant oil.
		37.07 Replaces drier/drier core.
		37.08 Replaces system components.
		37.09 Recharges with new refrigerant.
		37.10 Adjusts system metering device.
		37.11 Replaces system metering device.
		37.12 Adjusts system operating controls.
		37.13 Labels refrigerant system.
		37.14 Analyzes refrigerant oil.
	38. Decommissions equipment.	38.01 Recovers existing refrigerant.
		38.02 Recovers refrigerant oil.
		38.03 Tags unit.
		38.04 Locks out utilities.
		38.05 Seals lines.
		38.06 Pressurizes system components with nitrogen.
	39. Diagnoses compressor malfunctions.	39.01 Inspects compressor for visible and audible symptoms of malfunction.
		39.02 Checks functionality and output of electrical components.
		39.03 Checks operating pressures and temperatures.
		39.04 Checks capacity control system.
		39.05 Performs acid test/oil analysis.
		39.06 Determines clean-up procedures of system.
		39.07 Determines cause of failure.
		39.08 Determines repair requirements.
		39.09 Determines warranty status.
	40. Overhauls compressor assemblies.	40.01 Shuts down compressor including lock out.
		40.02 Isolates compressor and electrical.
		40.03 Recovers refrigerants.
		40.04 Disassembles compressor.
		40.05 Examines mechanical components for excessive wear and damage.
		40.06 Examines electrical components and wiring.
		40.07 Arranges for mechanical components to be rebuilt.
		40.08 Repairs mechanical components.
		40.09 Replaces mechanical components.
		40.10 Repairs defective electrical wiring components or controls.
		40.11 Replaces defective electrical wiring components or controls.
		40.12 Reassembles compressor.
		40.13 Performs leak test on compressor.

* = (NOT COMMON CORE)

BLOCKS	TASKS	SUB-TASKS									
	41. Installs compressor assemblies.	41.01 Removes shipping materials.	41.02 Verifies compressor specifications.	41.03 Mounts compressor.	41.04 Aligns compressor.	41.05 Connects electric motor or power supply.	41.06 Performs clean-up procedures (hermetic/ centrifugal, semi-hermetic).	41.07 Connects pipe/tubing including couplings and fittings for refrigerant, oil, water, steam, fuel and exhaust lines.	41.08 Checks piping/tubing connections including couplings and fittings for refrigerant, oil, water, steam, fuel and exhaust lines.	41.09 Tests leaks, refrigerant, oils and water lines.	41.10 Evacuates non-condensibles from system.
	42. Diagnoses evaporator and defrost system malfunctions.	42.01 Inspects evaporator and defrost system for visible and audible malfunctions.	42.02 Checks functionality and output of electrical components.	42.03 Checks operating temperatures, pressures and humidity.	42.04 Checks defrost capacity and control system.	42.05 Verifies flow of refrigerant.	42.06 Verifies air and fluid flow across evaporator coil.	42.07 Determines cause of failure.	42.08 Determines repair requirements.	42.09 Determines warranty status.	
	43. Overhauls evaporator and defrost assemblies.	43.01 Shuts down evaporator and defrost including system lock out.	43.02 Isolates evaporator and defrost.	43.03 Recovers refrigerant.	43.04 Disassembles evaporator assemblies.	43.05 Inspects evaporator and defrost components for damage or wear.	43.06 Selects replacement evaporator and defrost components.	43.07 Repairs evaporator and defrost components.	43.08 Replaces evaporator and defrost components.	43.09 Reassembles evaporator and defrost assemblies.	43.10 Performs leak test on evaporator and defrost system.	43.11 Arranges for re-certification as per local code.
	44. Installs evaporator and defrost assemblies.	44.01 Removes shipping materials.	44.02 Verifies evaporator and defrost specifications.	44.03 Mounts metering device.	44.04 Mounts defrost unit.	44.05 Connects metering device.	44.06 Connects piping/tubing.	44.07 Hooks up electrical power.	44.08 Performs leak test on evaporator and defrost systems.	44.09 Evacuates evaporator system.	44.10 Arranges for certification or re-certification.	
	45. Diagnoses air, water and evaporative condenser and cooling tower assembly malfunctions.	45.01 Shuts down/starts system.	45.02 Inspects condenser and cooling tower assemblies.	45.03 Checks functionality and output of electrical components.	45.04 Checks operating temperatures, pressures and humidity.	45.05 Checks capacity control system.	45.06 Verifies flow of refrigerant.	45.07 Verifies air/fluid flow across condenser.	45.08 Verifies water flow through tower.	45.09 Tests water quality for cooling tower.	45.10 Determines cause of failure.	45.11 Determines repair requirements.
		45.12 Determines warranty status.										
	46. Overhauls condenser assemblies including air, water and evaporative condensers.	46.01 Shuts down system including lock out.	46.02 Isolates condenser malfunctions.	46.03 Recovers refrigerant in condenser.	46.04 Disassembles condenser.	46.05 Inspects condenser components.	46.06 Selects replacement condenser components.	46.07 Repairs defective components.	46.08 Replaces defective components.	46.09 Reassembles condenser.	46.10 Performs leak test on system.	46.11 Arranges for re-certification of condenser.
	47. Installs condenser assemblies including air, water and evaporative condenser.	47.01 Removes shipping materials.	47.02 Verifies condenser specifications.	47.03 Mounts condenser.	47.04 Connects pipe/tubing.	47.05 Hooks up electrical power.	47.06 Performs leak test on system.	47.07 Evacuates system.	47.08 Arranges for certification of installation of condenser.			

* = (NOT COMMON CORE)

BLOCKS	TASKS	SUB-TASKS									
	48. Installs cooling tower assemblies.	48.01 Verifies cooling tower specifications.	48.02 Mounts cooling tower assemblies.	48.03 Levels cooling tower.	48.04 Connects control valves.	48.05 Connects electric motors and pumps.	48.06 Connects piping/tubing.	48.07 Mounts chemical metering devices.	48.08 Connects chemical metering devices.	48.09 Hooks up electrical power.	48.10 Performs leak test on system.
	49. Overhauls cooling tower assemblies.	49.01 Shuts down system.	49.02 Disassembles cooling tower.	49.03 Inspects water tower components.	49.04 Selects replacement components.	49.05 Repairs components.	49.06 Replaces components.	49.07 Reassembles cooling tower.	49.08 Tests towers for water leaks.		
	50. Diagnoses system accessory malfunctions.	50.01 Starts and shuts down system.	50.02 Reviews design specifications against accessory application.	50.03 Conducts visual inspection.	50.04 Checks functionality and output of electrical components.	50.05 Checks functionality and output of mechanical components.	50.06 Checks operating temperatures and pressures.	50.07 Verifies flow of refrigerant.	50.08 Determines cause of failure.	50.09 Determines repair required.	50.10 Determines warranty status.
	51. Overhauls system accessories.	51.01 Shuts down system including lock out.	51.02 Isolates accessories.	51.03 Recovers refrigerant.	51.04 Disassembles accessories.	51.05 Inspects components.	51.06 Selects replacement components.	51.07 Repairs system accessories.	51.08 Replaces system accessory components.	51.09 Reassembles accessories.	51.10 Performs leak test on system accessories.
	52. Installs system accessories.	52.01 Removes packaging.	52.02 Verifies accessory specifications.	52.03 Mounts system accessories.	52.04 Levels system accessories.	52.05 Connects piping/tubing.	52.06 Hooks up electrical power.	52.07 Adjusts system accessories.	52.08 Performs leak test on system accessories.	52.09 Certifies system accessories.	
	53. Diagnoses circulating pump malfunctions.	53.01 Inspects circulating pump for mechanical wear.	53.02 Checks functionality and output of electrical components.	53.03 Checks operating pressures.	53.04 Checks capacity control system.	53.05 Verifies fluid flow.	53.06 Performs leak test.	53.07 Checks alignment.	53.08 Determines cause of failure.	53.09 Determines repair requirements.	53.10 Determines warranty status.
	54. Overhauls circulating pumps.	54.01 Shuts down system, including lock out.	54.02 Isolates circulating pump.	54.03 Recovers refrigerant.	54.04 Drains fluids.	54.05 Disassembles circulating pump.	54.06 Inspects circulating pump components.	54.07 Selects replacement components.	54.08 Repairs defective components.	54.09 Replaces defective components.	54.10 Reassembles circulating pump.	54.11 Performs leak test on system.
	55. Installs circulating pumps.	55.01 Removes shipping materials.	55.02 Verifies circulating pump specifications.	55.03 Mounts circulating pump.	55.04 Mounts controls or valves.	55.05 Aligns circulating pump.	55.06 Levels circulating pump.	55.07 Hooks up electric motor or power supply.	55.08 Connects refrigerant/solution piping/tubing.	55.09 Checks piping/tubing connections, including couplings and fittings.	55.10 Evacuates non-condensibles from system.	55.11 Performs leak test on pumps.
	56. Performs preventive maintenance on refrigeration and air conditioning systems.	56.01 Checks operating temperatures and humidity.	56.02 Cleans coils and fans.	56.03 Tests functionality of operating and safety controls.	56.04 Checks system operating pressures.	56.05 Obtains oil samples for analysis.	56.06 Obtains refrigerant samples for analysis.	56.07 Tightens loose electrical connection(s).	56.08 Analyzes chiller solutions for contaminants.	56.09 Conducts vibration analysis.	56.10 Measures voltage and current for major components.	56.11 Conducts thermography test for hot spots.*

* = (NOT COMMON CORE)

REFRIGERATION AND AIR CONDITIONING MECHANIC (1997)

BLOCKS	TASKS	SUB-TASKS
		56.12 Inspects bearings.
		56.13 Checks compressor oil levels.
		56.14 Checks refrigerant levels.
		56.15 Conducts functional operation of fans.
		56.16 Completes inspection report.
		56.17 Maintains equipment log book.
		56.18 Inspects condenser and evaporators for fouling.
		56.19 Inspects operation of in-let vanes for air conditioning systems.
		56.20 Identifies system leaks.
		56.21 Identifies blockages in drain lines.
		56.22 Runs on-board diagnostics.
		56.23 Conducts eddy current analysis.*
		56.24 Lubricates motors and drives.
		56.25 Inspects belts.
		56.26 Checks coupling alignment.
		56.27 Completes inspection report.
	57. Performs preventative maintenance on heating, air conditioning and heat pump systems.	57.01 Checks drain line crankcase and mullion heaters for refrigeration systems.
		57.02 Checks burner set up and operation for heating systems.
		57.03 Inspects venting system for heating systems.
		57.04 Performs combustion check for heating systems.
		57.05 Inspects air supply for heating systems.
		57.06 Checks for cracked heat exchangers for heating systems.
		57.07 Checks operation and condition of heating sections.
		57.08 Checks electronic (electrostatic) air cleaner for air conditioning and heat pump systems.
		57.09 Changes filters for air conditioning and heat pumps.
		57.10 Checks crankcase heaters for air conditioning and heat pumps.
		57.11 Checks operation of economizer for air conditioning and heat pumps.
		57.12 Checks operation of humidification systems, air conditioning and heat pumps.
		57.13 Checks operation of dehumidification systems for air conditioning and heat pumps.
		57.14 Checks refrigeration and heat pump defrost controls.
		57.15 Checks supplementary heat for heat pumps.
F	**Control Systems**	
	58. Diagnoses metering device malfunctions.	58.01 Inspects metering devices visually.
		58.02 Runs on-board diagnostics.
		58.03 Checks functionality and output of electrical components.
		58.04 Checks operating temperatures, and superheat pressures.
		58.05 Performs leak test.
		58.06 Determines cause of failure.
		58.07 Determines repair requirements.
	59. Overhauls metering devices.	59.01 Shuts down system, including lock out.
		59.02 Isolates metering devices.
		59.03 Recovers refrigerant.
		59.04 Drains water.
		59.05 Disassembles metering devices.
		59.06 Inspects mechanical components.
		59.07 Inspects electrical components.
		59.08 Selects replacement components.
		59.09 Repairs defective components.
		59.10 Replaces defective components.
		59.11 Reassembles metering devices.
		59.12 Performs leak test on system.
	60. Installs metering devices.	60.01 Removes packaging.
		60.02 Verifies metering device specifications.
		60.03 Mounts metering devices.
		60.04 Aligns metering devices.
		60.05 Levels metering devices.
		60.06 Hooks up electric motor or power supply.
		60.07 Connects piping/tubing such as refrigerant and external equalizing lines.
		60.08 Checks piping/tubing connections including couplings and fittings.
		60.09 Evacuates non-condensible from system.
		60.10 Performs leak test on devices.
	61. Diagnoses control system malfunctions.	61.01 Inspects control systems visually and audibly.
		61.02 Interprets operating manuals, drawings and data.
		61.03 Runs on-board diagnostics.
		61.04 Checks electrical functions and output.
		61.05 Tests system control operation, including calibration.
		61.06 Determines cause of failure.
		61.07 Determines repair requirements.
		61.08 Determines warranty status.

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REFRIGERATION AND AIR CONDITIONING MECHANIC (1997)

BLOCKS	TASKS	SUB-TASKS
	62. Repairs control systems.	62.01 Shuts down system. 62.02 Isolates system. 62.03 Recovers refrigerant. 62.04 Disassembles unit. 62.05 Inspects electrical components. 62.06 Inspects mechanical components. 62.07 Repairs system control components. 62.08 Replaces system control components. 62.09 Adjusts system controls. 62.10 Calibrates system controls. 62.11 Reassembles system unit. 62.12 Performs leak test on control systems. 62.13 Evacuates system controls. 62.14 Recharges system controls.
	63. Installs control systems.	63.01 Removes shipping material. 63.02 Verifies system control specifications. 63.03 Assembles system controls. 63.04 Positions system controls by rigging and hoisting. 63.05 Mounts system controls. 63.06 Wires system controls. 63.07 Pipes system controls. 63.08 Performs leak test on controls and/or system. 63.09 Evacuates system. 63.10 Certifies control and/or system.*
G **Packaged and Split Systems**	**64.** Installs packaged systems for heating, refrigeration, air conditioning, heat pumps and dehumidification.	64.01 Obtains permits. 64.02 Removes shipping materials. 64.03 Verifies system specifications. 64.04 Positions system(s) by rigging/hoisting. 64.05 Connects utilities. 64.06 Connects air distribution system(s). 64.07 Installs exchange medium piping/tubing system(s). 64.08 Mounts operating controls and safety devices. 64.09 Wires operating controls and safety devices. 64.10 Connects chilled water lines. 64.11 Connects steam/hot water lines. 64.12 Connects drain lines.
	65. Installs split systems for refrigeration, air conditioning, heat pumps and dehumidification.	65.01 Obtains permits. 65.02 Removes shipping materials. 65.03 Verifies system specifications. 65.04 Positions components by rigging/hoisting. 65.05 Connects heat exchange medium piping system. 65.06 Connects refrigerant piping/tubing and accessories. 65.07 Connects utilities. 65.08 Connects air distribution system.* 65.09 Installs heat exchange medium piping system. 65.10 Mounts operating controls and safety devices. 65.11 Wires operating controls and safety devices. 65.12 Connects chilled water lines. 65.13 Connects drain line. 65.14 Performs leak test on system. 65.15 Evacuates systems. 65.16 Certifies system.
H **Preparation of Construction for Refrigeration and Air Conditioning Space**	**66.** Constructs walk-in boxes.	66.01 Removes shipping materials. 66.02 Verifies walk-in boxes. 66.03 Interprets drawings. 66.04 Erects walk-in boxes. 66.05 Installs doors and accessories. 66.06 Installs vacuum break. 66.07 Installs shelving and racking. 66.08 Repairs floor/base. 66.09 Caulks joints. 66.10 Installs hangers for piping. 66.11 Installs curbs. 66.12 Cleans walk-in boxes and surrounding area.

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REFRIGERATION AND AIR CONDITIONING MECHANIC (1997)

BLOCKS	TASKS	SUB-TASKS
	67. Constructs computer rooms.*	67.01 Removes shipping materials.*
		67.02 Verifies computer room assemblies.*
		67.03 Lays out floor.*
		67.04 Seals room.*
		67.05 Sets up pedestal.*
		67.06 Installs tiles.*
		67.07 Arranges for ramps/steps to be built.*
	68. Installs display cases.	68.01 Unloads display cases.
		68.02 Verifies display cases.
		68.03 Interprets drawings.
		68.04 Positions display cases.
		68.05 Aligns display cases.
		68.06 Connects display cases.
		68.07 Installs accessories.
		68.08 Hooks up wiring and plumbing to display cases.
		68.09 Connects drains.
		68.10 Installs shelving and racks.
		68.11 Cleans cases and surrounding area.
		68.12 Performs operational check.
		68.13 Installs humidity control system.
		68.14 Starts up system.

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